Certificate No:
TAD00001GW

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Valve

with type designation(s)
HK-B2010

Issued to
Hi-Kalibre Equipment Ltd.
Edmonton, AB, **Canada**

is found to comply with
DNV-OS-E101 – Drilling facilities, Edition July 2021
DNV statutory interpretations DNV-SI-0166 – Verification for compliance with Norwegian shelf regulations, Edition July 2021

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at **Houston** on **2022-11-09**
This Certificate is valid until **2027-11-08**.
DNV local station: **Vancouver**

Approval Engineer: **Marco Romero**

for **DNV**

Sowkarthika Seetharaman
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

Product description
Ball valve assembly, manually actuated, for wellhead and tree equipment application in the petroleum and natural gas industries.

Design codes/standards used as references
API 6A, *Specification for Wellhead and Tree Equipment*, 21st Ed.
ASME *Boiler and Pressure Vessel Code*, Section VIII, Div. 2, 2019 Ed.
NACE MR0175, *Materials for use in H_2S-containing environments in oil and gas production*, 3rd Ed.

Application/Limitation

Design Parameter	Value	(equivalent)
API 6A Performance Requirement	PR1	
API 6A Pressure Rating	10,000 psi	(69.0 MPa)
Hydrostatic Test Pressure	15,000 psi	(1013.5 MPa)
Class P Temperature Rated Valve:	(-20°F to 180°F)	(-4°C to 93°C)
API 6A Material Class	DD	
Service	Sour/H_2S	
API 6A Product Specification Level	PSL-2	

Type Approval documentation

Tests carried out
Design Validation testing reviewed and approved by DNV Surveyor under Hi-Kalibre Equipment Test Procedure Report PR.CO-ENG- FAT-012BV10

Marking of product
For traceability the following marking is to be carried out on each product:
1. Serial No. which relates the equipment to certificates and manufacturing documentation.
2. Manufacturer's name or trademark
3. Additional Marking at Manufacturer's discretion.

Periodical assessment
Periodical assessments for type approvals will be required after two years (+/- 90 days) and after three-and-a-half years (+/- 90 days) in accordance with DNV-CP-0338, Section 4.

Other conditions/comments
1. Procedures related to testing, welding, NDT, and other quality control requirements are to be reviewed/approved by DNV's local surveyor.
2. Actuator design review is excluded from this TAC. When equipment is certified to DNV-OS-E101, actuators are also subject to Category I equipment requirements and the specified requirements of the applicable normative reference for the system and/or equipment (See API 6A Sections 14.11.2 & 14.16.2).
3. Actuator torque limitations specified by the equipment manufacturer shall be complied with.

Seat Break Torque	:	5,796 in-lbf at 10,000 psi working pressure
Maximum Torque on Stem	:	6,222 in-lbf